Claims

1. New protein-polycation conjugates which are capable of forming, with nucleic acids or nucleic acid analogues, soluble complexes which are absorbed into human or animal cells, characterised in that the protein component of the conjugates is a protein capable of binding to a cell surface protein expressed by cells of the T-cell lineage, so that the complexes formed are taken up into cells which express the T-cell surface protein.

2. Conjugates according to claim 1, characterised in that their protein component is a preferably monoclonal antibody or a fragment thereof, directed against the T-cell surface protein.

3. Conjugates according to claim 1 or 2, characterised in that they contain a protein capable of binding to CD4.

4. Conjugates according to claim 3, characterised in that they contain a monoclonal anti-CD4 antibody or the fragment thereof which contains a gp120 binding epitope.

5. Conjugates according to claim 3, characterised in that they contain as protein HIV-1 gp120 or a homologous protein of related retroviruses or a fragment thereof which binds to CD4.

6. Conjugates according to claim 1 or 2, characterised in that they contain a protein which binds to a tumour marker expressed on T-cells.

7. Conjugates according to claim 6, characterised in that they contain a protein which binds to CD7.

8. Conjugates according to ~~one of claims 2, 4, 6 or 7,~~ characterised in that they contain an antibody in a form which is directly coupled to the polycation.

9. Conjugates according to ~~one of claims 2, 4, 6 or 7,~~ characterised in that they contain an antibody in a form bound by means of a protein A coupled to polycation.

10. Protein A-polycation conjugates for preparing antibody conjugates according to claim 9.

11. Conjugates according to claim 1, characterised in that the polycation is an optionally modified protamine.

12. Conjugates according to claim 1, characterised in that the polycation is an optionally modified histone.

13. Conjugates according to claim 1, characterised in that the polycation is a synthetic homologous or heterologous polypeptide.

14. Conjugates according to claim 13, characterised in that the polypeptide is polylysine.

15. Conjugates according to ~~one of claims 11 to 14~~, characterised in that the polycation has about 20 to 500 positive charges.

16. Conjugates according to ~~one of claims 11 to 15~~, characterised in that the molar ratio of T-cell binding protein to polycation is about 10:1 to 1:10.

17. New protein-polycation/nucleic acid complexes which are absorbed into human or animal cells, characterised in that the protein component of the conjugates is a protein capable of binding to a cell surface protein expressed by cells of the T-cell lineage, so that the

complexes formed are taken up in cells which express the T-cell surface protein.

18. Complexes according to claim 17, characterised in that they contain as the conjugate component one of the conjugates defined in ~~claims 1 to 9 or 11 to 16~~.

19. Complexes according to ~~one of claims 17 or 18~~, characterised in that they additionally contain a non-covalently bound polycation, which may optionally be identical to the polycation of the conjugate, so that the internalisation and/or expression of the nucleic acid achieved by the conjugate is increased.

20. Complexes according to ~~one of claims 17 to 19~~, characterised in that they contain a virus inhibiting nucleic acid.

21. Complexes according to claim 20, characterised in that they contain a nucleic acid which inhibits replication and expression of the HIV-1 virus or related retroviruses.

22. Complexes according to claim 21, characterised in that the inhibiting nucleic acid is complementary to sequences of the HIV-1 genome.

23. Complexes according to claim 22, characterised in that the nucleic acid is complementary to sequences of the tat gene.

24. Complexes according to claim 22, characterised in that the nucleic acid is complementary to sequences of the rev gene.

25. Complexes according to claim 22, characterised in that the nucleic acid is complementary to sequences of

the nef gene.

26. Complexes according to claim 22, characterised in that the nucleic acid is complementary to LTR-sequences.

27. Complexes according to claim 22, characterised in that the nucleic acid is complementary to the tar sequence.

28. Complexes according to ~~one of claims 20 to 27~~ claim 20, characterised in that they contain an inhibiting nucleic acid in the form of a ribozyme, optionally together with a carrier RNA, or the gene coding therefor.

29. Complexes according to claim 28, characterised in that they contain a nucleic acid in the form of a genetic unit consisting of a tRNA-gene as carrier gene and a ribozyme gene arranged within this gene.

30. Complexes according to ~~one of claims 20 to 27~~ claim 20, characterised in that they contain an inhibiting nucleic acid in the form of an optionally modified antisense oligonucleotide, optionally together with a carrier nucleic acid, or in the case of an RNA-oligonucleotide, the gene coding therefor.

31. Complexes according to claim 20, characterised in that they contain a nucleic acid coding for a virus protein which contains a trans-dominant mutation.

32. Complexes according to ~~one of claims 17 to 19~~ claim 17, characterised in that they contain an oncogene-inhibiting nucleic acid.

33. Complexes according to claim 32, characterised in that they contain an oncogene-inhibiting nucleic acid in the form of a ribozyme, optionally together with a

carrier RNA or the gene coding therefor.

34. Complexes according to claim 33, characterised in that they contain an oncogene-inhibiting nucleic acid in the form of a ribozyme, optionally together with a carrier RNA, or the gene coding therefor.

35. Complexes according to ~~one of claims of 17 to 19~~ claim 17, characterised in that they contain as nucleic acid a therapeutically or gene therapeutically active gene or gene section.

36. Process for introducing nucleic acid or acids into cells which express a T-cell surface protein, by forming one of the complexes defined in ~~claims 17 to 35~~ claim 17, which is preferably soluble under physiological conditions, from one of the protein-polycation conjugates defined in ~~claims 1 to 9 or 11 to 16~~ claim 1 and nucleic acid or acids, optionally in the presence of non-covalently bound polycation, and bringing cells which express the T-cell surface protein, especially T-cells, into contact with this complex, optionally under conditions under which the breakdown of nucleic acid in the cell is inhibited.

37. Process according to claim 36, in which a complex is formed from a protein A-polycation conjugate, consisting of protein A and one of the polycations defined in claims 11 to 15 and one of the nucleic acids defined in claims 20 to 35, and the complex is brought into contact, in the presence of an antibody directed against a T-cell surface protein, with cells which express this surface protein, the antibody being bound to the conjugate component of the complex.

38. Pharmaceutical preparation containing as active component one or more therapeutically or gene therapeutically active nucleic acids in the form of one of the complexes defined in ~~claims 17 to 35~~ claim 17.